

## ABSTRACT

Methods, apparatus and systems for regenerating, monitoring and bridging optical signals through an optical cross-connect switch to provide increased reliability. A self testing method, apparatus and system for an optical cross-connect switch. . An  
5 optical-to-electrical-to-optical converter (O/E/O) is provided in an optical cross-connect switch to provide optical-electrical-optical conversion. I/O port cards having an optical-to-electrical-to-optical converter are referred to as smart port cards while I/O  
port cards without an optical-to-electrical-to-optical converter are referred to as passive port cards. Test port/monitor cards are also provided for testing optical cross-connect  
10 switches. Methods, apparatus and systems for performing bridging, test access, and supporting redundant optical switch fabrics are also disclosed.